QUALITY ASSURANCE PROJECT PLAN FOR INTERIM GROUNDWATER MONITORING SKINNER LANDFILL SITE

Prepared for:

Skinner Landfill PRP Group

June 4, 1993

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FOR INTERIM GROUNDWATER MONITORING
SKINNER LANDFILL SITE
WEST CHESTER, OHIO

Prepared for:

Skinner Landfill PRP Group

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Quality Assurance Project Plan
for Interim Groundwater Monitoring
Skinner Landfill Site
West Chester, Ohio

Prepared By: Dunn Corporation, 12 Metro Park Road, Albany, NY 12205
on behalf of the Skinner Landfill PRP Group

Date: June 4, 1993

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Between August 1977 and January 1979, the OEPA and the Ohio Attorney General's Office tried repeatedly to obtain a court order requiring the Skinners to remove the wastes disposed at the site. The court rejected those requests but ordered the Skinners to stop all disposal activities unless granted permission by the OEPA and the Butler County Board of Health. Thus, waste disposal activities at the site during the 1980's were limited to the landfilling of construction/demolition and landscaping debris.

The site was listed on the National Priorities List (NPL) in 1982. The initial phase of the remedial investigation (RI) began in September 1984, a second phase of the RI was conducted in 1989, and the Baseline Risk Assessment and Feasibility Study (FS) were completed in April 1992. The RI found that groundwater in the immediate vicinity of the buried waste lagoon and landfill contained low levels of volatile organic compounds (VOCs) and some metals. The RI data also showed that these chemicals have not migrated away from the disposal areas and toward the East Fork of Mill Creek to any significant degree. In particular, chemicals related to the waste disposal areas have not been reliably detected in wells located between the disposal areas and the East Fork of Mill Creek.

1.3 Summary of Monitoring Activities

As proposed in the Interim Remedial Measures (IRM) Work Plan approved by U.S. EPA on March 1, 1993, the groundwater monitoring activities will include quarterly sampling of six existing monitor wells positioned along Mill Creek downgradient of the buried waste lagoon (GW-06, GW-07, GW-09, GW-10, GW-28, and GW-38; Figure 2). Monitoring of these wells will provide advance warning of contaminant migration toward Mill Creek.

As required by U.S. EPA's comments on the draft IRM Work Plan, the groundwater monitoring program also includes the installation and monitoring of two new wells along the access road to the landfill site (Figure 2).

Based on the approved IRM Work Plan, groundwater samples collected from these eight wells (six existing and two newly installed) will be analyzed for the Target Compound List (TCL) organic parameters and the Target Analyte List (TAL) inorganic parameters as defined in the CLP's current Statements of Work (SOWs). The quarterly sampling and analysis program is summarized in Table 1. In addition, all aspects of the laboratory analysis will be conducted in accordance with these SOWs (i.e., OLC01.0 for volatile organics, OLM01.8 for other organics, and ILM03.0 for inorganics, or the most current version if applicable).

Two sets of samples will be collected for metals analysis. One set will be collected as directed by U.S. EPA in their letter of March 26, 1993. This set will be obtained using a low-flow sampling pump in an effort to obtain unturbid samples for analysis of "total metals". For this set, a "pre-sample" will be tested in the field for turbidity. If the turbidity is less that 50 ntu, the sample will be collected and preserved without filtering. If the turbidity is greater than 50 ntu, the sample will be filtered using a 5 micron filter prior to preservation.

The second set will also be collected from the low-flow pump, but will be filtered using a 0.45 micron filter prior to preservation. This set will be analyzed for "dissolved metals" to provide a basis for comparison with four rounds of existing data from the site that were obtained from filtered samples.

1.4 Project Schedule

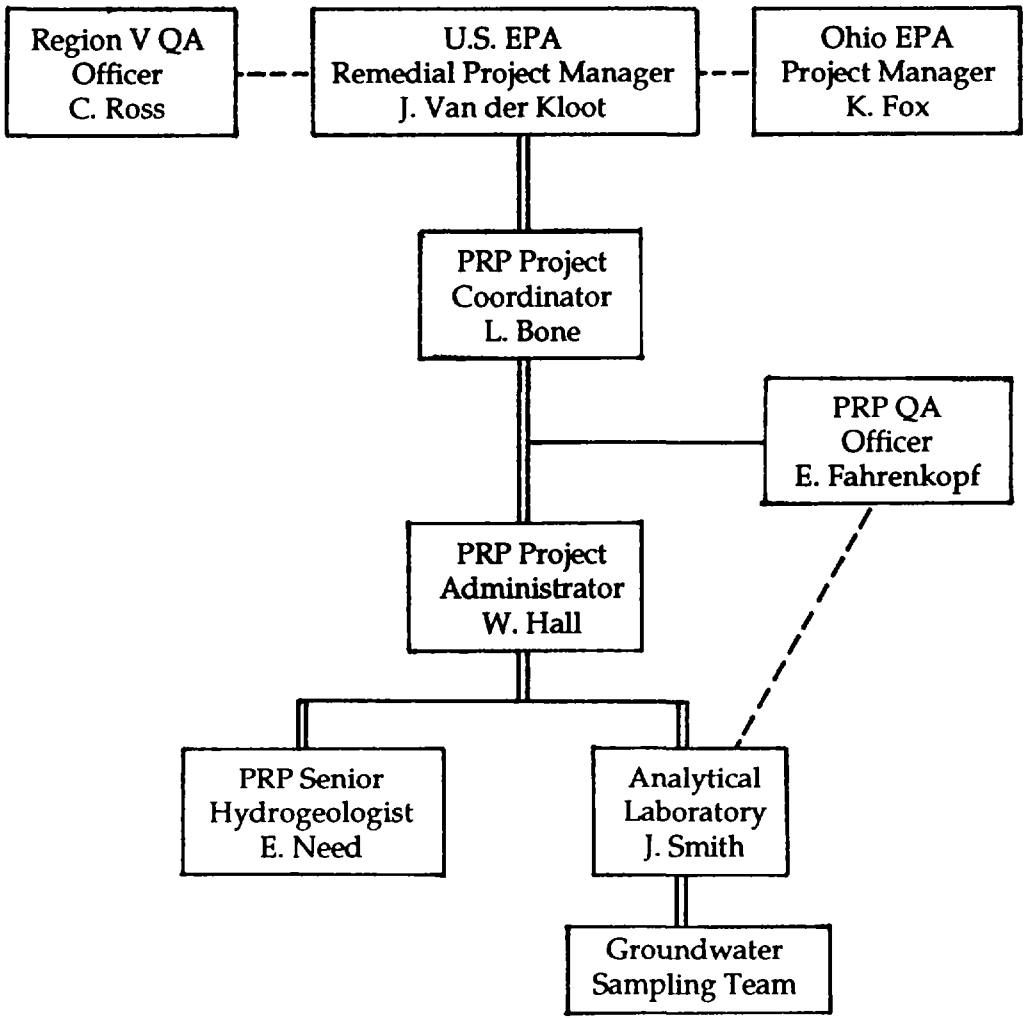
The groundwater monitoring program will be initiated within 30 days of receiving final U.S. EPA approval of this QAPjP. Following installation an development of the two new monitor wells, the first round of samples will be collected and analyzed. The results of this and all subsequent rounds of sampling and analysis will be submitted to U.S. EPA within 60 days of sample collection. The monitoring program will continue on a quarterly basis until its requirements are changed by a subsequent order or decree.

1.5 Data Quality Objectives

The Data Quality Objectives (DQOs) for field data (temperature, pH, conductivity, and turbidity) will be level 1, a screening level appropriate for real-time field measurements. The DQOs for all laboratory data will be level 4, a confirmational level using the full CLP protocols.

FIGURE 3

PROJECT ORGANIZATION CHART



2.3 Laboratory Staff

Field sampling and laboratory analytical services will be provided by Enseco-Wadsworth/ALERT Laboratories, North Canton, Ohio. Descriptions of the function positions and responsibilities within the laboratory are presented in Chapter 3 (sections 3.1 through 3.11) of the laboratory's written QA Program Plan, which has been appended to this QAPjP as Appendix A. Jeffery Smith will serve as Enseco-Wadsworth/ALERT Laboratories' Project Manager for this work and will be the prime point of contact at the laboratory.

2.4 Specified Responsibilities

Day-to-day field sampling activites will be performed and directed by experienced staff from Enseco-Wadsworth/ALERT Laboratories.

Evidence audits of field records will be performed by the PRP Group's QA Officer and/or Senior Hydrogeologist.

External field audits will be performed by the PRP Group's QA Officer and/or Senior Hydrogeologist; and external laboratory audits will be performed by the PRP Group's QA Officer and/or Project Coordinator.

External performance and system audits of the laboratory will be performed by Region V Central Regional Laboratory personnel.

The well will be constructed of 2-inch I.D., Schedule 40 PVC with flush-threaded couplings. The well screen will be five feet long and have 0.006-inch factory milled slots. The annular space will be filled with a well-graded fine-to-medium grained silica sand pack to a height of two to three feet above the top of the screen. A two to four foot seal of compressed bentonite pellets or pumped bentonite slurry will be placed above the sand pack, and the remainder of the borehole will be grouted with cement bentonite grout placed with a tremie pipe. The well will be completed at the surface with a locking protective casing that is anchored into the grout and surrounded with a sloping apron of concrete.

The water table well will be installed upon completion of the bedrock well. The borehole for this well can be drilled using 4.25-inch hollow-stem augers to reduce the amount of cutting produced. No soil samples will be collected during this drilling. The depth of the well will be based on data obtained during drilling of the bedrock well. All drill cuttings will be containerized for future consolidation under the landfill cap. The well will be constructed in the same general manner as the bedrock well except that its screen will be 10 feet long, and it will be positioned to place about 7 to 8 feet of the screen below the water table.

Equipment and materials used to drill, sample and/or construct the wells will be decontaminated prior to each insertion into the ground. Decontamination will be done inside the fenced area north of monitor wells GW-06, GW-07, and GW-38; decontamination fluids will be allowed to percolate into the soil at this location. Augers and well pipe (if not pre-cleaned and delivered to the site in sealed packages) will be steam cleaned. Split-spoons will be washed in an alkaline detergent and rinsed in potable and then deionized water.

Each newly installed well will be developed to remove fine-grained materials from the sand pack and formation, reduce the turbidity of the groundwater samples, and increase the yield of the well. Water removed from the well during development will be discharged to the ground surface in the vicinity of the wells. Well development will continue until the water is relatively sediment free (turbidity value less than 50 ntu), or when turbidity has stabilized and the amount of water removed during development equals ten well volumes.

4.3 Groundwater Sampling

Samples will be collected from the eight monitor wells for laboratory analysis of the full TCL organics parameter list and the full TAL inorganics parameter list. The wells will be purged and sampled using a positive displacement pump whose flow rate can be adjusted to as low as 200 ml/min. Water level measurements will be made prior to purging to determine the volume of water in each well. These measurements will be included in the quarterly reports submitted to U.S. EPA. During purging, the pump will be positioned at the top of the water column, and lowered as necessary to accommodate any drawdown. Purging will be considered complete when temperature, pH, and conductivity have stabilized (0.5 degrees, 0.1 standard units, and 5 percent RPD, respectively). The samples will be collected directly from the pump discharge line.

The pump will be decontaminated prior to use at each well by washing/rinsing the outside with an alkaline detergent, potable water and deionized water, and by pumping these same fluids through the pump and discharge line. Decontamination fluids will be discharged to the ground surface inside the fenced area north of monitor wells GW-06, GW-07, and GW-38. Water removed from the wells during purging will be discharged to the ground surface in the vicinity of each of the wells being sampled.

The quarterly sampling and analysis program is summarized in Table 1. Reportable measurements of temperature, pH, conductivity, and turbidity will be made in the field using the procedures described below in Section 7.0 of this QAPjP. Two sets of samples will be collected for metals analysis. Both sets of samples will be collected using the sampling procedures and equipment described above. The first set of metals samples will be collected for analysis of "total metals" as directed by U.S. EPA in their letter of March 26, 1993. For this set, a "pre-sample" will be tested in the field for turbidity. If the turbidity is less that 50 ntu, the sample will be collected and preserved without filtering. If the turbidity is greater than 50 ntu, the sample will be filtered using a 5 micron filter prior to preservation. The second set of metals samples will be filtered using a 0.45 micron filter prior to preservation. This set will be analyzed for "dissolved metals" to provide a basis for comparison with four rounds of existing data from the site that were obtained from filtered samples.

Filtering will be performed using standard, commercially available, disposable filtering apparatus. The sample to be filtered will be collected from the pump discharge line in a clean 1 L polyethylene bottle. A new filtering apparatus will be used for each sample. Water will be added to the upper reservoir, and a vacuum will be applied to the lower reservoir (using a hand vacuum pump) to assist the movement of water through the filter. As necessary, the lower reservoir will be emptied into the final collection bottle. If necessary, the upper side of the filter will be cleaned using a stream of deionized water from a wash bottle. The bottle used to hold the unfiltered sample and the will not be reused in any way.

Samples will be uniquely numbered as follows: 1) the two-letter site code will be "SK"; 2) the matrix code and location identifier will be "GW##" where ## is the well number or the QA sample designation (FB for field blank, FD for field duplicate, and TB for trip blank; only one of each kind is planned for each round of sampling); and 3) the sampling round will be designated by a two-digit number starting with "01". for example, SK-GW06-01 is a first round sample from well GW06, and SK-GWTB-03 is a third round trip blank.

Information on sample volumes, sample bottles, sample preservations, and sample holding times for the quarterly groundwater monitoring activity are presented in Table 6. Sample containers will be provided by Enseco-Wadsworth/ALERT Laboratories which will prepare or obtain the containers in accordance with current U.S. EPA guidance (i.e., Specifications and Guidance for Obtaining Contaminant-Free Sample Containers, April 1991 or April 1992). Data recording, sample custody, sample labeling, and sample handling are discussed in Section 5.0 of this QAPjP.

Table 6

SAMPLE BOTTLES, PRESERVATION AND TECHNICAL HOLDING TIMES

Parameters	Container	Preservative	Technical Holding Time	Amount
TCL Volatiles	40 mL VOA vials	HCl to pH<2	14 days	2 x 40 mL
TCL Semivolatiles	1 L amber glass	Cool, 4 degrees C	7 days to extraction 40 days to analysis	2 x 1 L
TCL Pesticides/PCBs	1 L amber glass	Cool, 4 degrees C	7 days to extraction 40 days to analysis	2 x 1 L
TAL Inorganics (unfiltered/filtered) mercury	1 L polyethylene	HNO_3 to pH<2	180 days (except mercury) 28 days	1 L
TAL Cyanide	1 L polyethylene	NaOH to pH>12	14 days	1 L

Note: Technical holding time is from date of collection.

5.2 Laboratory Custody Procedures

Laboratory custody procedures are described in Chapter 6.0 (section 6.2) of Enseco-Wadsworth/ALERT's QA Program Plan which is attached as Appendix F.

5.3 Final Evidence Files

Custody of the PRP Group's final evidence files will be maintained by the Group's Project Administrator. The files, which will include field logbooks and original laboratory reports will be kept in a secured, limited access area.

9.0 INTERNAL QUALITY CONTROL CHECK

9.1 Field QC Checks

QC checks on potential impacts to precision and accuracy from sample collection will be assessed through collection and analysis of field duplicates and field blanks in accordance with the applicable procedures described above in Sections 3.0 and 4.0.

QC checks for field measurement of temperature, pH, conductivity and turbidity are limited to the following : (1) checking the reproducibility of the measurement by obtaining multiple readings on a single sample or standard, (2) by daily calibration of the instrument, and (3) by calibration checks after ever 10 samples.

9.2 Laboratory Analysis

Two mechanisms will be used by Wadsworth-ALERT Laboratories to ensure the production of analytical data of known and documented usable quality: a formal written QA Program Plan and specific QC checks in accordance with that plan and the applicable CLP SOWs being used for this project (i.e., OLC01.0 for volatile organics, OLM01.8 for other organics, and ILM03.0 for inorganics, or the most current version if applicable).

QA Program Plan

Enseco-Wadsworth/ALERT Laboratories maintains a Quality Assurance Program Plan, the stated objective of which is to provide legally and scientifically valid laboratory services. The program directs organizational adherence to a system of mandatory operating practices and procedures which ensure that all generated laboratory data are scientifically correct, legally defensible, and fulfilling of applicable regulatory requirements.

QC Checks

The specific internal QC checks to be used by Enseco-Wadsworth/ALERT Laboratories for this project include those specified in the CLP SOWs being used for this project (i.e., OLC01.0 for volatile organics, OLM01.8 for other organics, and ILM03.0 for inorganics, or the most current version if applicable), and those identified in Chapter 11 (sections 11.2 through 11.9) of the Laboratories' QA Program Plan (Appendix G).

11.0 PREVENTIVE MAINTENANCE

11.1 Field Instruments

The field instruments for this project include thermometers, pH meters, conductivity meters, and turbidity meters. Specific preventive maintenance procedures to be followed for field instruments are those recommended by the manufacturers.

Field instruments will be checked and calibrated in the warehouse before they are shipped or carried to the field. These instruments will be checked and calibrated daily before use. Calibration checks will be performed every 10 samples and will be documented in a Log Book specifically dedicated to Field Instrument Calibration.

Critical spare parts such as probes, electrodes, batteries and standards will be kept on-site to minimize instrument down-time. Back-up instruments will be available on-site or within one-day shipment to avoid delays in the field schedule.

11.2 Laboratory Instruments

As part of their QA/QC Program, a routine preventive maintenance program is conducted by Wadsworth-ALERT Laboratories to minimize the occurrence of instrument failure and other system malfunctions. Wadsworth-ALERT Laboratories has an internal group to perform routine scheduled maintenance, and to repair or to coordinate with the vendor for the repair of all instruments.

All laboratory instruments are maintained in accordance with manufacturer's specifications and the requirements of the specific analytical methods being used. The maintenance is carried out on a regular, scheduled, basis, and is documented in the laboratory instrument service logbook for each instrument.

Specific maintenance procedures are outline in Chapter 13.0 (section 13.2) of Wadsworth-ALERT Laboratories QA Program Plan (Appendix H).

Appendix F

Chapter 6.0
Enseco-Wadsworth/ALERT Laboratories
Quality Assurance Program Plan

Appendix G

Chapter 11.0
Enseco-Wadsworth/ALERT Laboratories
Quality Assurance Program Plan

Appendix H

Chapter 13.0
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